ELECTRICITY on the FARM

The National Magazine of Rural Electrification

JANUARY, 1943

THIS MONTH—

Homemade Elevators Fill Cribs
Small Dehydrators "Go To Bat"
Iron Wire in Wartime Brooder
Profits On $15 Monthly Bill
¼ hp Motor Swings a Buckeaw
Lambs Saved By Chick Brooder
Don't Starve Your Motor
Light You Pay For Can Be Lost
Thermostat Cuts Fuel Bills $15
Electrical Housekeeping
Answers To Reader's Questions

A CAPPER-HUBBARD-MANN PUBLICATION

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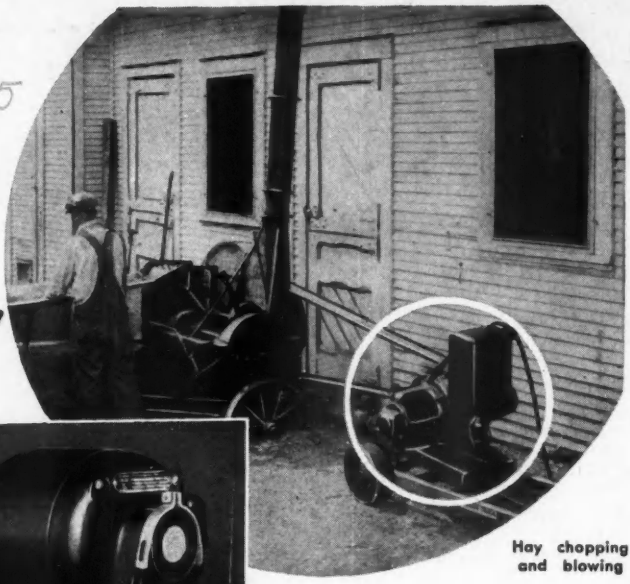
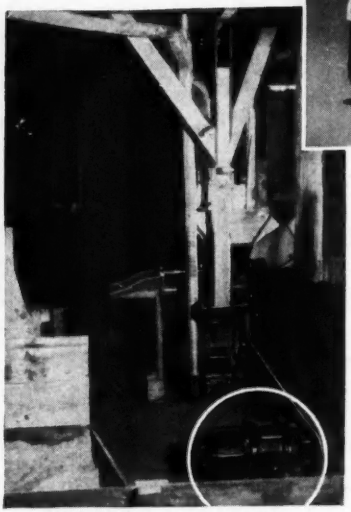
6 WAYS TO KEEP "Wired Hands" FIT



Hay chopping and blowing



Feed grinding and corn shelling

AS THE farm-labor shortage grows increasingly acute, "wired hands" are more and more being substituted for hired hands to help produce the food that's going "to win the war and write the peace." On farms from coast to coast these electric motors are grinding feed, chopping hay, sawing wood, threshing grain, pumping water, and doing many other jobs; it is imperative that they be kept in tip-top operating condition.

These six steps to prevent trouble will help you avoid costly breakdowns, and the repairs that probably could not be completed for weeks.

1. Check motors frequently to keep bearings, windings, etc. free from dirt and grime.

2. Keep bearings *properly* lubricated at all times, using light oil in babbitted sleeve bearings and light grease in ball bearings. Remember that too *much* lubricant is as dangerous as too little.

3. Remove motors from hazardous or extremely dusty locations (unless properly protected with some type of enclosing shield).

4. Check belt alignment to avoid unnecessary bearing wear.

5. Provide positive overload protection. (This consists of a device that automatically shuts off a motor when too great a load is put on it.)

6. If motor is obviously not operating properly (smoke, scorched insulation, excessive noise, etc. are signs of probable breakdown), do *not* operate until it has been thoroughly checked by a competent electrician and the cause removed.

Your local electrical dealer will gladly work with you to keep your motors "healthy." In certain cases a short note to the Rural Electrification Section, General Electric, Schenectady, N. Y., will bring a solution to your motor problems. In any event, mail the coupon today for your copy of a valuable, 16-page manual on the care of electric motors.

General Electric, Sec. 303-7 a
Schenectady, N. Y.

I want to keep my "wired hands" fit; send me a copy of "How to Care For Motors" (GEA-2856A).

Name .....

Address .....

Post Office ..... State .....

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GENERAL ELECTRIC

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON

December, 1942

FARMERS OF AMERICA.

More farm scrap is needed. Farm scrap is needed now in large amounts to blend with lighter scrap gathered in the recent city drive, in order to make the high quality tanks and guns our boys must have on the fighting fronts.

You have done a fine job of collecting and turning in your scrap but the need increases. Therefore, I am asking each of you to search your farm again and also to turn in your scrap as fast as it accumulates. This winter you will be getting your farm machinery ready for the big drive next spring. Turn in all broken and worn out parts and any equipment that's no longer useful. If it can't be used on the farm front, turn it in for scrap and it will be used on the battle front

Claude R. Wickard

Secretary of Agriculture

Editor's Chat

Happy New Year!

My New Year greeting to you this year is both a wish and a prayer. A wish that each of you may have a year of prosperity—a year filled with work and sacrifice and devotion to our country, but a year which, with all its unforeseen events will bring you an inner glow of happiness for work well done as a farmer and as a citizen. A prayer that 1943 will embrace that which, above all, will give the world happiness—peace.

The past year has been a prosperous one for farmers generally. I would not say a good year, for financial prosperity is only one factor in a good year. It has been an eventful year. The boys are in the army, the hired man and house help in war plants at wages we would welcome for ourselves, but cannot pay. We have had machinery and equipment shortages, transportation difficulties, rationing, priorities with perplexing forms, cows sold to the butcher because there were no milkers and feeders. Yet many farmers have made money.

The coming year's happiness is partly for us to make. A resignation to the fact of war and its inconveniences, and a determination to help win it for humanity's sake are essential. Some advance-planning will help. Chart your farming year in the light of present knowledge, but leave plenty of space for turning in case you must set new goals in midseason, or if the combine breaks and repairs are slow, or if labor vanishes. What will you do if ——? A plan may not remove the emergency but might help in meeting it.

There is little likelihood for decreasing demand for farm products this year. More likely the need will be greatly increased as we carry the example of democracy into occupied territories. We have a war job to do. Work makes for happiness.

Happy New Year!

Cobs of Humanity

I walked from Penn station to the office this afternoon (a Saturday in December). It is an experience. Coming up past Macy's store there were probably 1,000 struggling humans on the sidewalks on each side of the street in one block. Fifth Avenue was much the same. No, there was no parade. It was just a Christmas shopping crowd. It talks every language in the world. Getting through that crowd is about like breaking through a pine or vine-maple thicket on a deer hunt. It is something to tell the grandchildren about if you do it only once. As a daily doing, a lover of the wide open country would re-echo Patrick Henry "Give me liberty or give me death."

Our Purpose

It is a good plan to restate one's purpose periodically. The statement may "kick you in the ribs" and arouse you from lethargy; or it may inspire you to hold your banner high.

ELECTRICITY ON THE FARM was established to *help farmers* in their use of electricity. That is still its purpose. While we lay no claims to infallibility or perfection, our test for material we publish is, "Will it help some reader?"

For the war period we will give major attention to information which will aid in (1) the production of war crops; (2) relief and replacement of farm labor; (3) keeping equipment in productive use for the duration; (4) providing some inspiration and information on which to build for post war farming.

We believe that farming as a way of life and a life work has many advantages and intriguing possibilities that other occupations do not have. It also has some definite disadvantages. These disadvantages are each year becoming fewer.

If our goal could be reached we would have every farmer saying "I'm Proud I Am a Farmer!"

Geo. W. Kable

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★ WARTIME STRATEGY ON THE FARM ★

Put electricity to work in stepping up your wartime egg and poultry production

To meet wartime needs, poultry farmers have been asked to jump their egg production to an all-time high of approximately 60 billion during 1943. With meat becoming scarcer and scarcer, the demand for poultry is mounting every day.

And farmers must meet these increased demands with *less farm help* than ever before!

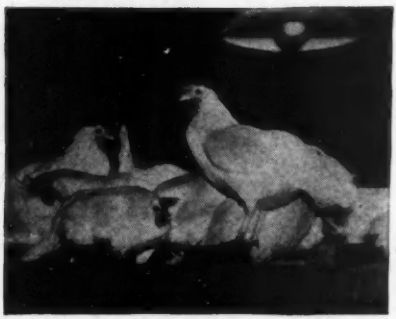
Electricity can help you do this. The power you get off the high lines cuts down many man-hours per job ... steps up production ... improves quality.

Electricity has many valuable uses around the poultry farm ... lighting the henhouse, heating brooders, grinding feed, cooling and storing eggs and poultry, cleaning and grading eggs, pumping water.

You will find many helpful hints on how to increase your egg and poultry production in the new Westinghouse "Poultry Farm Bulletin." It's yours for the asking. Just fill in and mail the coupon below. You will receive your Bulletin promptly!

ELECTRICALLY HEATED BROODERS *are free from fire hazards, don't consume oxygen, and require very little attention. Cheap to buy ... or easy to build. Usually save their cost in a couple of seasons!*

IN THE HENHOUSE ➡ *Electric lights increase your hens' "working day," and encourage them to do their bit for Uncle Sam!*



Westinghouse

Westinghouse Electric & Manufacturing Company
Pittsburgh, Pennsylvania

ELECTRICAL PARTNER OF AGRICULTURE

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, ROOM 504
312 Fourth Avenue, Pittsburgh, Pa. (Dept. EF-13)

Please send me the free copy of "Farm Motors" booklet ( ) ... also free Farm Bulletins on the application of electricity to the subject checked below.

☐ Poultry ☐ Beef Cattle ☐ Cooking, Canning, and Preservation of Food
☐ Clothing ☐ Crops ☐ Dairy Cattle ☐ Sheep ☐ Home Improvement
☐ Swine ☐ Rural Electrification ☐ Handicraft ☐ Truck Gardening

Name .....

Address .....

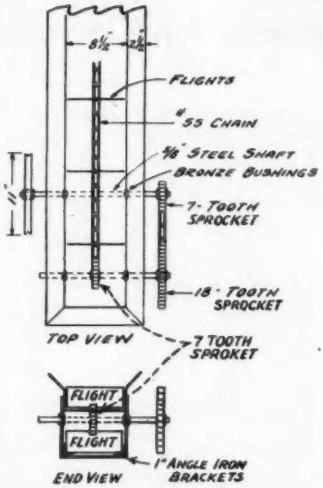
FREE: "Poultry Farm Bulletin", and 11 other Farm Bulletins, describing the wartime use of electricity on the farm. Also "Farm Motors" booklet which gives valuable information on the selection, care, and use of electric motors. Just check the ones you want and mail the coupon, *today*.

Ohio Farmers Crib Corn With Homemade Electric Elevators

By VIRGIL MARVIN

ONE of the farm jobs with which electric power can be of assistance in saving labor is the elevation of grain and ear corn into storage bins. These little elevators, made at home and operated with ½ to 1 horsepower motors are becoming popular on many farms, and will be more so as farm labor is more difficult to hire.

Mr. Ed. Forrest, a progressive farmer living three miles east of Wauseon, Ohio, has solved his grain and ear corn elevating problem by building one of these elevators. He considers that it does the same work that three men would do in shoveling corn into the cribs. He has elevated about fifty acres of ear corn with the elevator and has found it very satisfactory for the job.



Above: Sketch of lower end of elevator showing drive pulley, speed reducing mechanism and angle-iron supports for returning flights.

Left: This elevator is similar in size to the Forrest elevator. It was built by Marl Mohr of Wauseon, Ohio, and is made of wood. The ½ horsepower motor is mounted at the upper end of the elevator. No countershaft is used. The speed is reduced by using a very large pulley on the elevator shaft and a small pulley on the motor. (24 inches to 1½ inches would do.)

Essentially the elevator consists of one strand of chain to which are attached a series of flights. These flights fit into a trough with a smooth bottom and the grain or ear corn is elevated by being dragged up the trough.

The trough may be made of either wood or metal. It is 24 feet long, 8½ inches wide inside and 3 inches deep. The flights are 8 inches wide and 2½ inches high, spaced 11 inches apart. The chain is a standard No. 55 steel chain. It passes over sprockets at either end of the conveyor. On the metal elevator made by Mr. Forrest, the flights are supported when returning by two 1 inch angle irons suspended beneath the metal trough. The sides of the trough are made of sheet metal bent out as shown in the drawing. The sprocket shafts at either end are supported by bronze-bushed bearings attached to the sides of the trough.

The conveyor is operated at about 167 feet per minute through a chain and sprocket reduction as shown in the drawing.

Left: This is Ed. Forrest and his homemade metal ear corn and grain elevator. It is driven by a one horsepower single phase motor. The 8½-inch trough has been quite satisfactory for ear corn. This elevator with its motor is mounted on wheels and a framework for moving it about and raising and lowering it.

If your appliance cords are frayed or kinked or have rough sharp spots in them, better repair or replace them before you get into more serious trouble blowing fuses or starting fires. Most of the trouble with appliances is in the attachment cords.

Small Dehydrators "Go to Bat"

Homemade Dehydrators Prove Valuable in Georgia and Texas. Different Types Are Used With 100 Watt Lamps as Heating Elements.

By L. W. GRAY

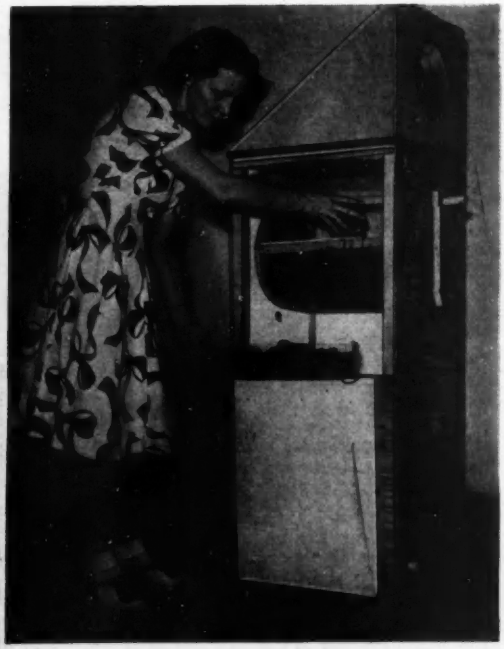
THE June issue of ELECTRICITY ON THE FARM carried an article, "Small Driers for Fruits and Vegetables," that offered to the farmer one of the most economical means of preserving the surplus farm food supply that is available. Many commercial dehydrators are now in use drying fruits, vegetables, meat and eggs but the small drier as described is a home unit that produces a good quality product and is large enough to meet the requirements of the average rural and farm family.

More than seventy-five of the small, home dehydrators have been constructed in Georgia and were in use last fall. They can be built for a cost of around $15.00 and offer an opportunity to the vocational school boys, farm shop and other organizations with shop facilities, to make up these units for groups or individual use.

These small dehydrators seem to be best adapted to the drying of certain types of fruits and vegetables such as peaches, apples, pears, corn, peas, squash, butter beans, okra, carrots and egg plant. Our experience with the dehydration of food products has shown that a good quality product can be obtained where care is exercised and the proper drying time allowed. Unless the drying is properly done the product will not keep in storage.

We have found that one bushel of peaches (Elbertas) will turn out 4½ pounds of the dried product; one bushel of apples 3½ to 4 pounds; one bushel of pears 5 pounds; peas and carrots 1 pound in ten; okra, eggplant and squash 1 pound in eight. These small

Below: **This is A. R. Ergle, Rural Engineer, Georgia Power Company, who was instrumental in having many of these driers built in Georgia. The drier is the one described in "Electricity on the Farm" in June and was designed by the Agricultural Engineering Department, University of Nebraska. Nine 100-watt lamps are used as heaters. An ordinary house fan is placed in the top to draw the heated air up through the trays. The trays are staggered by placing alternate ones against the back and front of the drier so the heated air has to travel back and forth over them when the products are first put in. Air comes in through holes in the bottom.**



Above: **This drum type drier was designed by B. H. Standley, Agricultural Supervisor of the Houston Lighting and Power Company. The wire drum holds about a half bushel of products. It is turned around several times each hour or two to get even drying. The arrow is left pointing at the hour at which the drum is again to be turned. The heating lamps and fan are placed similarly to the Nebraska drier.**

driers are proving very popular and some of those attending demonstrations tell us that the drier acts as an incentive to plant a garden as it provides a means of storing vegetables for winter use, or taking care of the surplus that would otherwise go to waste. The dried product when properly done will rehydrate and in most cases return to its natural state and look about as fresh and appetizing as when taken from the vine or the garden.

Wartime Radiant Heat Brooder Has Iron Wire Heating Element

New Type of Brooder With Stovepipe Wire Heating Element Has Given Good Results in the Northwest. Made from Available Materials. Warms the Chicks—Not the Air.

By **C. W. WILDEBOUR***

WHEN Nichome wire, commonly used for heating elements in brooders, started getting scarce because of war demands, we instituted some studies of other wires which might be used as substitutes. Common No. 22 iron stovepipe wire has given reasonably good results. It has been used effectively in a radiant heat brooder which we have been developing and which has now proved itself under poultry farm conditions. The brooder has the additional advantage of being easily constructed at a reasonable cost.

The outstanding difference between this brooder and most other types is in the placing of the heating wires. They are tacked against the ceiling of the brooder with double pointed tacks and they keep the chicks warm mainly by radiation. Being against the ceiling, there is little opportunity for the air to circulate around the wires and be heated by convection. Because of this, the brooder must be operated somewhat differently from a heated air brooder.

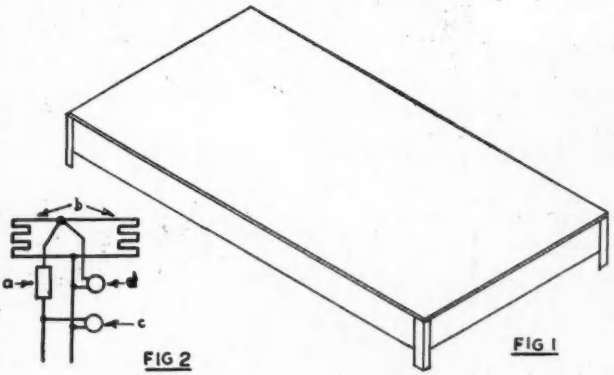


FIG 2

FIG 1

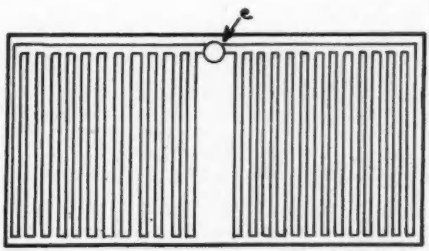


FIG 3

Figure 1 gives the general appearance of the 4′ x 8′ brooder. The inside ceiling height should be ten inches. The ceiling is constructed of two 4′ x 8′ sheets of ¼″ plywood, spaced 1″ apart, the one-inch space being filled with "Rock-wool" or other insulating material. The apron is 1″ x 6″ and the legs sufficiently long to leave a space of 4″ from the floor to the lower edge of the apron. *Do not use curtains.*

Figure 2 gives the schematic wiring diagram. (a) is the thermostat, (b) the heating elements, (c) the attraction light and (d) the pilot light.

Figure 3 is a view showing the manner in which the heating elements are strung on the ceiling. (e) is the thermostat and wiring connection box. The ceiling is first lined with sheet asbestos, after which the heating elements are stapled directly against the asbestos, the staples being driven through the asbestos and into the wood. Use light, double-pointed tacks about six inches apart. If the heating elements are strung about 1 15/16″ apart the space will be filled as shown in the drawing. Keep the elements about two inches away from the edges all around as shown.

The two heating elements draw 600 watts each. For *each* element use 125 feet of No. 22 iron wire coiled on a ⅛″ mandrel and stretch the coil out to 92 feet. If Nichrome wire is available, each element should consist of 46 feet of No. 18 wire, not coiled. Spacing between wires should then be about 4″ so as to evenly cover the ceiling.

Operation of Brooder

Keep the brooder raised so that the apron just clears the heads of the chicks at all stages of growth. Litter should be of some dark-

*Mr. Wildebour is Farm Electrification Director, Puget Sound Power & Light Company, Puyallup, Washington.

colored material such as peat moss. Light surfaces as straw and shavings do not absorb heat rays. Adjust the temperature to chick comfort—*not by thermometer*. Radiant heat brooders give chick comfort at much lower air temperatures than other types.

Iron Wire a War Substitute

The use of iron wire heating elements is only recommended during the present emergency. Iron wire has two definite drawbacks. It will rust; also, when first turned on the current used is about doubled for a few seconds until the wire has become heated. When operated on circuits already partially loaded, this first rush of current may blow fuses.

Mr. Jack Linn, a hatcheryman of Puyallup, Washington, has been brooding about 8,000 chicks each season for many years. After using the new brooder last season, he made the following statements regarding it:

"These new radiant brooders can be operated higher off the floor than ordinary brooders.

"Although I was worried at the beginning of the season, I found that curtains were not necessary; and the four or five-inch clearance from the bottom of the apron to the floor permitted a good circulation of air.

"One of the things that pleased me most was that while a certain amount of moisture may develop in the brooding room and even on the floors, yet underneath this brooder the litter and the floor stayed 'bone-dry.'

"Due to the fact that the chicks were so well distributed with sufficient room to prevent any crowding together, I was unable to detect, at any time, any trace of the chicks sweating.

"The *best part of it all* is the mortality record. I placed 506 chicks under the brooder, and at the end of six weeks I had lost fifteen, which represents a loss of only 3%. I believe that any poultry man will agree that this is very low.

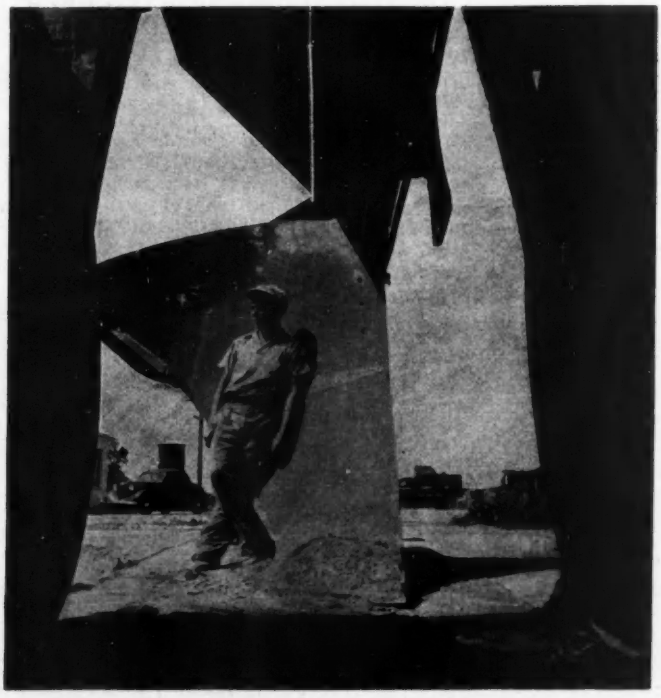
"I would like to say that I learned a lot about brooding through this experiment and am certainly pleased with the results obtained. I have put my coal brooders in storage—it's electric brooding for me from now on."

This same style of brooder has given equally good results in brooding turkey poults as reported by Mr. R. L. Rutter, a large turkey grower near Ellensburg, Washington. Mr. Rutter used 4 ft. by 5 ft. brooders with 180 poults under each brooder. The heating arrangement consisted of one 600 watt heating element on a thermostat and one 600 watt element on a manually operated switch. The manually controlled element was only for emergency use in the event of extremely cold weather.

Just a word of caution regarding iron wire heating elements. Iron wire *increases* its resistance with an increase in temperature. Therefore, the wattage will *decrease* with an *increase* of temperature. For that reason, in order to secure 600 watts from 92 feet of No. 22 wire, the wire must be coiled and stretched as specified above. If, for example, 125 feet of No. 22 wire should be wound on a ⅛" mandrel and stretched out to only 50 feet instead of the specified 92 feet, the coil would then draw much less than 600 watts. The reason for this is that each turn or convolution would be nearer to its neighbor, causing the wire to operate at a much higher temperature. When used as specified, the wire operates at a low black temperature.

When not used, iron wire elements should be "painted" with oil to prevent rust.

In 1882, when Thomas A. Edison first used the Pearl Street Station in New York, electricity cost 25c per kilowatt-hour and it took 10 pounds of coal to generate each kilowatt. This past year, the average cost of electricity to householders was 3.69c and it was made with 1.3 pounds of coal.



Weighing more than five small automobiles, an hydraulically controlled plow used in western United States, cuts furrows six feet deep. When drawn by three tractors developing 400 horsepower, the device covers four acres in an 8-hour day, turning under the impoverished surface earth and pulling fresh, virgin soil to the surface.

Electricity Helps Us Earn Money

Some Practical and Understandable Ways in Which Electricity Has Put Dollars in the Purse When Dollars Were Needed. Four Ladies Tell How. These are Taken From Gail Meredith's Contest Letters.

Roaster Saves Hired Man

• When it became necessary for me to help outside with the work I had to find some way to get good meals and not spend too much time fixing them. So I bought an electric roaster. I can prepare many things in it. I put them in and when I come in from outside my meal is done. My friends all like to come as they say everything I make in my electric roaster tastes so good. It does work well and does not need to be watched, so we have saved money by not having to hire a man for the summer.

MRS. LUCAS S. EKERN,
Whitehall, Wis.

Does Sewing and Sells Cakes

• Here is the way electricity helps me earn a little extra money: In my spare time I use my electric sewing machine to make dresses for my friends. I charge a fair price and if I had more leisure to devote to the work I could have a nice business of my own. I, also, make aprons and do other plain sewing, and make a few pennies on each. These penny-profit jobs are turned into Defense stamps.

My electric mixer puts many a dollar in my pocket when eggs are plentiful. Only the best goes to market, so small and cracked eggs are kept for home use. Eggs are good food, but if served three times a day lose their palatableness. Before my family loses their appetite for eggs I use the mixer to make angel and sunshine cakes. These I sell for one dollar each and could fill orders the year round and would if the hens did not go on a strike once a year, sometimes oftener, which sends the price of eggs up. Without the mixer I never could make these delicate cakes as they require too much beating.

The electric washer earns dollars by saving them for me. Heretofore I paid a woman $3 a day to come in and do the washing, which was an all-day job with woman power. But with electricity doing the work, the wash is done in two hours. Besides, I do my sister's laundry work, as she is a cripple, and I never miss the time. And knowing that I have made life a little easier for her is compensation enough for that chore.

I do not go in for any of this work on a large scale as home duties come first, but when I feel the need of some ready cash I push in the plug and go to work.

MRS. ANN B. CALLWELL,
R. D. 1, Walden, N. Y.

Buttermilk from Refrigerator Buys Bonds

• It took our family ten years to realize what a refrigerator meant. That was last summer when our ten-year-old refrigerator gave up. Even I, a ten-year-old girl, lost money. Mother lets me churn the butter and I got the money for the buttermilk. That time the buttermilk spoiled and the pigs feasted on my profit and I got nothing. I am saving for a war bond and I needed that money to help make up the $4.50 I was short. Now we have a brand new refrigerator and I'm sure proud because the buttermilk don't spoil and I can go on saving for my bond.

ALICE MARIE LINGIS,
R. R. 1, Box 50,
Crete, Ill.

"What's it good for?"
"Guns, tanks, and maybe part of a plane"

Water and Lights Bring Eggs

• Electricity has helped me earn money by supplying running water and lights for a flock of 200 hens.

My husband and I are small, hill farmers and we found it very hard to pay for our farm and meet the living expenses of an increasing family on the cash we were making from truck crops and cotton. So we decided that I could help best by tending a flock of hens. We built a new laying house in 1938 and equipped it with running water from the little electric pump that supplies our home. We also installed lights in the laying house which we could turn on from a switch in our bedroom in the early morning. When my flock had been laying one year, they had cleared about $1.50 each above expenses. Electricity is also due the credit for me being able to do my housework and care for the flock without extra hired help, with the aid of electric iron, refrigerator and other household appliances.

I think electricity is the greatest one thing that ever came to rural people.

MRS. A. I. RHODES,
RFD 1, Castor, La.

347 Egg Hen

A White Leghorn hen, Victory Queen, owned by J. A. Hanson, Corvallis, Oregon, has just made a new all-time World's record for laying in official egg-laying contests. Her production was 347 eggs in 357 days at the Storrs egg-laying contest in Connecticut. At one time she laid for 86 consecutive days. In 1941, the average production of all hens in the United States was 141 eggs per bird.

You Can Lose the Light You Pay For

Rooms with Dark Walls and Furnishings Need Three Times as Much Light as Light Colored Rooms. Bright Light May Give Poor Illumination. Good Seeing Is the Important Thing

By **JULIA W. WOLFE**

THE light one pays for can be easily and unconsciously wasted. If you will replace the things that absorb light, and use what light is needed under proper conditions, your house will be better lighted, and your monthly bills reduced.

Light absorption is a robber in many homes. Even a flood of sunlight cannot properly illuminate a room if most of the light-rays are absorbed by the furniture and furnishings.

The sun gives the only pure white light; certain arc-lights come next, and then the filament incandescent lamps. Light from the sky, such as comes from the north on a clear day, is bluish white.

In the dark there is no such thing as color. The reddest gown is the same color as a pure white one when both are placed in darkness. Color depends on the length of the light-waves. The light waves that produce the colors in the blue end of the spectrum are very short compared with those that produce the colors near the red end. The source of light that we know as red gives off only waves of a length that will produce that particular color. On the other hand an object appears red because its surface reflects all the red light-waves back to the eye, and absorbs all the other waves. If you try to light a blue drapery with a red light, the drapery will appear black, because it can reflect only the short waves that produce blue, and absorbs all the others. A thing is black when it absorbs all the colors at once.

If you put a red shade on a lamp, only the red rays will be transmitted; the rest will be absorbed by the shade.

Dark Paper Will Steal Light

A room cannot be well lighted if the paint and paper absorb most of the light. A white wall reflects more than seventy per cent. of the light available; a dark brown wall, so common in many of the old houses, reflects only thirteen per cent. To illuminate a room finished in dark brown requires therefore, several times the candle-power necessary to light the same room when finished in white.

Dark woodwork absorbs light. Chintzes, and all kinds of wall-paper also absorb light. Wall-paper in dark flowers and figures are especially wasteful of light. In selecting paper, choose light tints. Rooms that face the north and east, especially, need lighter tints than those that face the south and the west.

Although the total reflection from dark brown paper is only thirteen per cent, the direct rays from a lamp illuminate objects they fall on while the others are absorbed by the paper. The real loss is about two-thirds. In other words, it requires three times the original candle-power to illuminate a room changed from a light finish to a dark one.

Sight Comes First

It would seem, then, that most efficient lighting would be supplied by clear lamp bulbs behind plain glass shades or coverings in a room finished in pure white. But such a room would soon fatigue the eyes, and perhaps injure them permanently. It is more important to save sight than to save light. In any installation the first thought should be for the eyes of the people who will occupy the room. Therefore:

Avoid illuminants that have red or violet rays.

Avoid lights that are flickering; the iris cannot keep pace with fluctuations.

Do not place your lamps so that the light from them falls upon glazed or polished surfaces, for the glare produced is very trying to the eyes.

If a bright source of light is seen, a picture of it is formed on the retina that blots out the picture of the surrounding objects. This is the reason we cannot see beyond a bright light, although there may be considerable light falling on the objects in the background.

Light that comes from an unusual angle should be avoided, as certain parts of the retina are not prepared to receive strong light. Light reflected from snow, sand, water, or a powerful center light

Dark paper and furnishings absorb the light.

hung low, produces a sense of fatigue, and may even result in temporary blindness.

Too little light is as bad as too much light in many homes, but the abuse of the eyes by too much light is infrequent.

Within the past twenty years light reflectors have been given scientific treatment. One can buy shades that diffuse the light equally through all parts of a room, that throw the light evenly over a given space, or that focus it on a desk, a table or a reading chair.

Never surround a good lamp with a light-killing shade. Do not expect too much from dirty shades and lamps. Soot and dirt, even though hardly perceptible to the naked eye, will lessen the efficiency of a lamp. Light bulbs need attention as much as window panes.

We have much to be thankful for in electricity, for it is a most flexible means of correct lighting; it gives little heat and is not affected by drafts.

Here is a table showing the percentage of light reflected by wall-coverings and paints:

White paper or paint	70
Chrome yellow	62
Plain buff	45
Yellow paper	40
Dark brown paper	13
Cobalt blue	12
Deep chocolate paper	04.

Chick Brooder Saves the Lambs

By STANLEY DORAN

THIS is the story of me, Snowball, a lamb who was born some time last January. Of course, there is nothing unusual about me, but I did think that you sheep men might like to hear about the unusual way I got my added boost in life. I was a very observant lamb when I was small, so think I can tell you most of the details you would like to know. Shall I start at the beginning?

I was born on the farm of Willie Doran near Pataskala, Ohio. When I first opened my eyes, I was amazed by a strange red light that filled my world. Warmth radiated from somewhere high above me and strength seemed to enter my body with every breath I took. Of course, my mother made a lot over me and kept encouraging me to get up. After a while I did get up and get my dinner.

After dinner I decided to go for a little stroll. I brushed aside the burlap wall that enclosed my little world on one side, and staggered out into the cold dark world. I stood outside and shivered in the cold for a while, and then, seeing that red light shining through the burlap blankets, I returned inside to comparative warmth.

Maybe you're interested in knowing how the heat and light which made me so comfortable was produced. Well, it's very simple. The pen had been an old horse stall, but the manger had been transformed into a hay rack for sheep. Near the feed rack, and about three feet six inches above the ground, two boards were nailed across between the walls of the stall. On top of these boards, which was just above my mother's back, was an electric chick brooder. A metal top protected the heating unit from straws, and shoved the heat down. The brooder was high enough that straws on my mother could not reach the unit. The feed rack and the two walls of the stall formed three sides of our pen. Feed sacks hung almost to the ground on the one remaining open side, so that mother and I could go outside if we wanted to, but the cold air could not reach us inside. Confidentially, we did not leave the brooder very often.

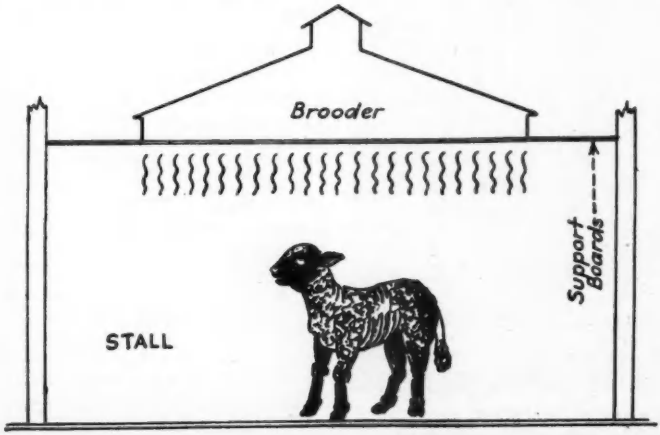
Electricity Helped Save Most of Us

As soon as I was dry and well able to furnish my own warmth and protection, we were moved to a larger pen, because an expectant mother was going to take our place. In the big pen I got acquainted with all my relatives.

When warm weather came and we sheep were turned out on our pasture, there were seven proud mothers to worry about 15 of us lambs. All of my friends were either twins or triplets. I found out later that if all of the lambs had lived, there would have been one more happy mother, and three more playmates. One lamb was born dead, but two froze to death. You see, the brooder had not been installed then.

So you sheep men remember, electricity is a great thing, and us lambs don't consider it a disgrace to be born under a chick brooder. Uncle Sam says that food will win the war, so here's my proposition. You turn the heat on us when we are young, and we'll help you turn the heat on the Japs.

SNOWBALL.



★ *Buy War Bonds* ★

DON'T STARVE YOUR MOTOR

One of a Series of Articles on Use, Care and Repair of Equipment and How to Save Service on It

NO good farmer would starve a horse and expect that horse to do heavy work. You must feed a horse. You must also feed a motor. One can see from the appearance and actions of a horse that he is underfed. It is not so easy with a motor. A starved motor does not look thin, but it does fail to deliver its rated power.

The most prevalent method of starving a motor is to feed it with too small wires, or wires that are too long for their size. It is something like trying to water a horse through a ⅛ inch pipe. If a horse or a motor fails to produce under such conditions, it is not the fault of the horse or the motor; and it should not be necessary to call a veterinarian or service man. Feed it!

In these times, when motors are being called on for new jobs and to produce to their utmost to relieve man power, there is bound to be some underfeeding, with perhaps the blame placed on the motor. The blame should be on the one who supplies the feed.

When wires are used that are too small, there is a drop in pressure or voltage in the line. The loss of motor power is not just proportional to the drop in voltage—it decreases with the square of the voltage. For example, if you have a motor operating on a line where the voltage is only 90 per cent of what it should be, the power delivered by the motor will be only 0.9x0.9 or 81 per cent. A 1 hp motor would deliver only 4/5 hp, and a 5 hp motor only 4 hp. You may not recognize this drop in power because motors are capable of delivering more than their rated power when the load is put on them, but this is what does happen: The power delivered by a motor is proportional to the product of the voltage times the current. If the voltage drops, then the current must increase to deliver the same power. Now, the more current flowing in a wire, the hotter the wire gets. So, when the voltage drops, the feed wires and the wires in the motor windings get hotter than they should. The motor will carry a smaller overload and it may become overheated sufficiently to injure the insulation on the windings.

To make it still worse, you are paying for that part of the power used to heat the wires without getting it. With a 1 hp motor operating on a 10 volt drop, there is a waste in the line of approximately 100 watts. Its about like burning a 100 watt lamp in the daylight.

There is also another angle to motor starving. When the motor is first turned on, the current needed to start it is as much as three to five times that needed to keep it running at full load. Starting the load, therefore, means a much greater drop in voltage in the undersized wire, and results in some cases in the motor being unable to get up to speed, and in delivering only half its power when the greatest power is needed.

A motor may sometimes be starved by poor or loose connections or splices, or by switches too small to carry the current used by the motor.

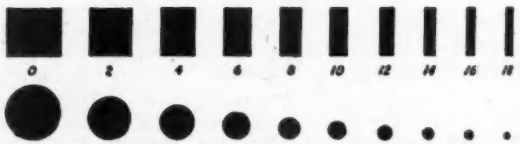
What Can Be Done for a Starved Motor?

Obviously, if the wires are too small, they should be replaced by larger ones. That may not be so easy, however, in war time. There are other things that can be done.

You can cut down voltage loss by reducing the length of wires feeding the motor. It may be that you are using longer lead wires from the switch or outlet to the motor than necessary; or the motor may be on a wiring circuit that meanders around over the farm from building to building before it reaches the motor. Reduce the length of the circuit by running more directly from the service entrance to the heavy loads. Possibly a relocation of the entrance switch will improve service all over your farm and relieve you from paying for a continuing loss due to heating of those long circuit wires.

Change Motors From 115 to 230 Volts

Another remedy is to change your 115 volt motors over to 230 volts if you have 115-230 volt service. The voltage drop in a 230 volt line will be just about one-fourth what it is in the 115 volt line. Many motors are made for use on either 115 or 230 volt ser-



Use This Chart to Check Wire Sizes

Approximate diameters of solid metal wires (not stranded) in American wire gage or Brown & Sharpe gage numbers. Insulation should, of course, be removed to determine the wire size. Close one eye when making comparisons.

vice. A simple change of connections in the motor is all that is necessary.

If none of the above remedies can be used, you may still be able to cut off part of the load on the circuit while the motor is being used. If the water system and load on a motor with a 3% drop in voltage when there is no other load on the line. The distance is the *one way distance from motor to service*. This distance is important. It is not just the line from the switch or outlet to the motor; it must go the whole way back to where the entrance service is located on the farm to get the total voltage drop. If the wires from the transformer to the service entrance are long or too small, the distance should be taken all the way back to the transformer.

DISTANCES THAT POWER CAN BE CONDUCTED FROM SERVICE ENTRANCE TO MOTOR WITH DIFFERENT SIZE WIRES

Based on 125% Load and 3% Voltage Drop

HP	Motor Ampere Rating	Circuit Fuse Amps.	Wire Sizes No. 18	No. 14	No. 12	No. 10	No. 8	No. 6	No. 4	No. 0
			On 115 v. Circuits. Distance in feet.							
¼	4.8	15	*44*	110	173	280	448	695	875	2860
1/3	5.9	15	*36*	90	144	230	360	575	730	2320
½	6.7	20	*32*	80	127	195	320	505	640	2040
¾	9.0	30	*24*	60	94	150	240	380	480	1540
1	10.5	35	*20*	50	80	130	205	325	410	1300
2	19.0	60	..	..	..	70	110	180	225	725
3	27.0	80	..	..	..	..	80	130	160	510
5	44.0	125	..	..	..	..	..	..	100	382
			On 230 v. Circuits. Distance in feet.							
¼	2.4	15	*176*	440	700	1120	1800	2780	3500	11400
1/3	3.0	15	*144*	360	580	920	1440	2300	2900	9300
½	3.4	15	*130*	320	510	780	1280	2020	2560	8160
¾	4.5	15	*96*	240	380	600	960	1720	1920	6160
1	5.4	20	*80*	200	320	520	820	1300	1640	5200
2	9.5	30	..	110	180	285	450	720	900	2900
3	13.5	40	..	80	130	200	320	510	640	2040
5	22.0	70	..	48	78	120	195	310	400	1530

Blanks in the table and figures in italics indicate that the Code does not permit that size wire. Motors below the line in the upper table, ie., larger than ½ hp should be used on 230 v, circuits.
Fuse sizes are those prescribed by the 1940 Code. They protect the circuits,—not the motor. Watch for future articles on motor protection.

milking machine are on the same circuit, cut one off when the other is in use. Or, you may not be able to use the range or dairy water heater while you are grinding feed. Until you can put in heavier wires, cut off part of the load.

In case you have plenty of smaller size wires but cannot get heavier sizes you can, as a temporary expedient, use two or three strands of smaller wire in place of a larger size.

2 No. 14 wires equal 1 between 10-12
3 No. 14 wires equal 1 between 8-10
2 No. 12 wires equal 1 between 8-10
2 No. 10 wires equal 1 between 6- 8

Motors of 1/3 hp or larger cannot be plugged in just anywhere without being sure the wiring and outlets are adequate to supply them. The use of lamp cord or extension cords for feeding motors, especially those over ¼ hp is bad practice. It is bad because the wire is too small (usually No. 18 or smaller) and because any breaks in the strands of wire may cause arcing and short circuits. The accompanying table of wire sizes gives the approximate sizes necessary to carry a 25% over-

Blanks in the table and hgures in italics indicate that the Code does not permit that size wire.

Motors below the line in the upper table, i. e., larger than ½ hp should be used on 230 volt circuits.

Fuse sizes are those prescribed by the 1940 Code. They protect the circuits—not the motor. Watch for future articles on motor protection.

Fish Planted by Planes

Trout are now being stocked in the inaccessible high mountain lakes of Montana and Idaho by dropping the young fish from airplanes. The planes fly over the water at elevations up to 400 feet and just dump out the fish. They come squirming down in a mist, the air cushioning their fall, and they swim away as soon as they hit the water. Being streamlined and light in weight, few of them are injured by the fall.

This Month's Cover

The cover picture is a reproduction of a Currier & Ives print of Benjamin Franklin discovering electricity. The discharge from the clouds was conducted down the wet kite string and jumped off the key to the Leyden jar.

Benjamin Franklin's mother, history records, attended church on the morning of January 17, 1706, and joined in the communion service at Old South Church. After this service she gave birth to a son, who was taken to the church in the afternoon of that day and baptized by the name of Benjamin. He was born in a house on Milk Street, nearly opposite the Old South Church, Boston, and was the tenth son.

Our Cartoonist Charles Skiles

So you may know another member of our editorial family who can put sketches and brains together in a snappy laughable manner, we present a little self sketch sent at our request by Charles Skiles.

"After analyzing myself and then spending hours trying to forget some of the things I had found out, this is the result.

"I was born in Pekin, Indiana, thirty years ago. We moved from Pekin (Peek In) to Seymour (See More). After a start like that, gags come easy. Lived in Kentucky until eighteen years ago and have lived in Daytona Beach ever since. Attended Georgia Military Academy, graduated from the local High School and went to art school. Worked in a barbecue stand, became envious of people who could afford to eat and have been cartooning for the past five years.

"I am single, own my home here where I live with my mother. Am not in the army because of a foot injury. Main interests outside of cartooning are a five-year-old nephew and discovering a method of retaining my fast disappearing hair."

Think I'll have Charles *sketch* some hair on my bald top, too.—EDITOR.

How to Build

A Motorized Buck-Saw

By F. S. ROOT
Northampton, Mass.

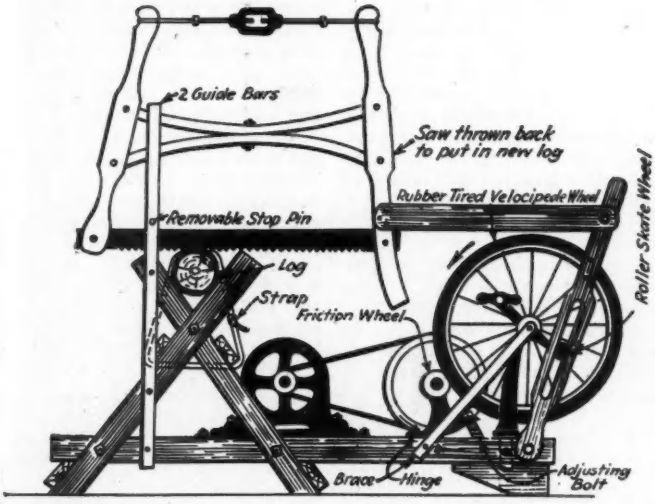
THE motorized buck-saw described here is a real genuine labor-saver, since it not only saws twice as fast as when operated by hand, but can keep it up all day. All you have to do is to feed it the logs.

Motive power is supplied by a ¼ H. P. motor from a junked washing machine, and the rubber tired front wheel, forks and pedals came from a velocipede in a junk yard. The friction drive countershaft was formerly a polishing head.

Because of the friction drive feature, if anything goes wrong, or the saw binds, the drive pulley simply slips on the rubber tire, and the saw stops without anything being damaged. Adjustment of the amount of friction required for good operation is obtained by tightening the long screws on the tipped up end of the countershaft, the other side of the base being hinged to the supporting plank.

On small logs, that are light enough to roll under the saw, an old trunk strap with quick-adjusting buckle holds the log in place. When a new log is to be put on the saw-buck the stop pin (limiting downward travel of saw) is pulled out and the saw swung back out of the way. Pulley sizes are figured to give approximately 100 forward strokes of the saw per minute. No attempt has been made to give pulley sizes here, since they will depend on what size velocipede wheel one is able to get. If no such wheel can be secured, a large wooden disk, with crank pin put about 6 inches from the center, and with a leather or rubber covered edge, could probably be successfully used.

My motorized buck-saw has cut quite a lot of cord wood, and has developed no troubles. It is very satisfactory, indeed, and I am the envy of all the neighbors.



One Western farmer having clay suitable for adobe bricks has solved the material shortage situation by building a 20 x 40 hen house of adobe at a total cost of $7.48 for roofing paper and glass cloth.

Old Phonograph Record As Milk Detector!

The most efficient and the cheapest way to detect udder infection in a herd is by the use of a piece of black metal or black composition material such as the smooth side of an old phonograph record.

According to E. J. Perry, extension dairyman at Rutgers University, a very good detector can be made by breaking an old phonograph record, grinding it down to a size of four by eight and a half inches and fitting it, sloping fashion, into a 10-cent baking pan.

"Foremilking on this black device is superior to the use of the better known wire strainer strip cup," Perry reveals. "A watery type of milk can easily be distinguished from normal milk. Milk with a bloody tinge shows up plainly as pinkish on the black background. Milk from the four quarters can be put on the plate at one time and a comparison of the type of milk can thus be made from each quarter.

Thermostat Cuts Fuel Bill $15

• **How I Save Time** and Prevent Waste by Means of Electricity.

1.—Thermostat control on our furnace.

a.—By using electric clock on my thermostat to open up the furnace in the morning I get one-half hour extra sleep.

b.—The thermostat saves approximately 3500 steps per week, by my wife or the children by turning furnace on and off.

c.—Since installing the thermostat, my yearly fuel bill has been cut approximately $15.00 by controlling the furnace better.

d.—The personal comfort experienced as a saving is of such importance to us that a stove without automatic control would seem useless.

2.—Lights, we believe, save at least two hours per week of our time just considering the time saved which was required for lighting lamps, items like maintenance, safety, eyesight, health and other "unfigurables" are the most important but would seem to require experiencing before the average farmer can understand.

WM. P. GIBSON,
Anatol, Minn.

Never a Dull Moment For Farm Tools

By ED. W. MITCHELL*

I HAD an old uncle who made it a practice to ask any new man applying for a job on his farm to lend him his jack-knife. If it was sharp, the man stood a good chance of getting a job.

Well, the same thing can be applied to the farm owner himself—if his tools are sharp and in good repair, it is a pretty sure indication he is a good farmer, or at least a fair mechanic, which nowa-days amounts to almost the same thing. Check your own tools and see how you rate yourself on this score.

There was a time when practically all the sharpening was done on a grindstone turned by boy-power; I know because I was rated as boy-power at one time and Bob Adams has a few lines that give the picture better than I can:

"We went to auction t'other day,
Among the hills not far away,
And there, 'mid piles of this and that,
A gray and grim old grindstone sat;
And as I stood the brute before,
Lo, all my youth came back once more.

Although to linger I inclined,
"Come on," said Jake, "it's time to grind."
A punctured can supplied the drip;
I gave the power and Jake the grip.

The eons came, the eons went,
But still agin the stone he bent:
And all Jake said to ease the work
Was "steady! hey there, Bub, don't jerk."

I saw a grindstone at a sale—
There is no moral to this tale;
I tipped my hat and spoke him civil,
But did not buy the old gray devil."

You know, the old-fashioned, hand-turned grindstone has probably done as much to drive boys away from the farm as any other one thing. I used to count the sections on the mower knife as Uncle Ed ground each one to a razor edge, and it seemed to me that bar was a hundred feet long and the sections without number.

All that is past now for the farm boys of today; or at least it can be for most of them, because most of our farms have electric power, and a small motor to turn a grindstone costs very little. As a matter of fact, thousands of grindstones are being turned by old motors retrieved from discarded washing machines and refrigerators.

*Ed is a New York dirt farmer and Farm Advisor for WGY radio station. This article is taken from one of his regular Wednesday noon WGY broadcasts.

Boys are scarce now, and it's hard to catch one long enough to make him turn a grindstone, so it looks as though the electric motor is our only way to get the job done.

Rat-Proof Farm Construction

Rodent-proof construction around farm buildings is neither impossible nor expensive. To prevent entry under concrete floors, the foundation walls surrounding should extend approximately two feet underground and should preferably be edged with a six-inch shelf extending outward at the bottom edge. Where structural support is not important, this shield can be a disk of three or four inches in thickness.

Wood walled and floored storage houses can be rodent-proofed by the use of quarter-inch hardware cloth. Metal pan shields between corn crib floor and supporting posts are effective. Sheet metal stripping of cribs for a distance of three feet above ground and with an extension flange at right angles of about four inches prevents climbing. Rats will burrow through mineral wool insulation, loose stone fill, sawdust and even broken glass fill in walls. The only safeguard is preventing their penetration of the outer wall surface. By keeping all feed in metal containers or wire shielded wood bins, sweeping up all spilled and loose feed and grain, shielding buildings and foundations against rat entry, the presence of rodents is discouraged and a substantial loss of money due to rodents is prevented.

From N. J. Extension Service

Every dollar spent for the war effort requires 2¾ kilowatt-hours of electric power.

An agricultural engineer, suffering from a bad attack of "formitis," as he described it, was recently heard to refer to the filling up of a form from (British) Ministry of Works and Buildings as "the best accelerated ageing test known to mankind." Sounds like US.

Pinyerds Make Profit on $15 Monthly Bill

The Pinyerd's Monthly Electric Bill Is $15. The Premium on Cooled Milk Pays It. Then They Save a Hired Hand for Milking, Operate a 22 Cu. Ft. Food Freezer, Cook and Operate the Other Electric Appliances "On Velvet."

By HOWARD CLAPPER

ONE month, last summer, Carl Pinyerd, a farmer from Wayne Twp., Knox County, Ohio, used 635 kilowatt hours of electricity. "Minimum Bill" Smith and "Watch the Meter" Jones muttered in their hearts about the terrible extravagance of the Pinyerds and 'lowed as how an ordinary farmer just couldn't pay a $15.00 monthly light bill and still make ends meet.

So to ease the skeptic minds we visited the Pinyerd 187-acre farm and this is the story.

All of the Pinyerd's major farming operations center around a herd of 21 dairy cows. The milk room annex to the large barn is equipped with a two unit electric milking machine and the fresh, clean milk goes straight to an eight can mechanical milk cooler. This cooler rapidly brings down the temperature of the milk and besides putting the "blitz" on the bacteria, it also puts extra dollars in Mr. Pinyerd's pocket.

You say, "How?" Well, first there are no cans of spoiled milk and second, the Cleveland concern that bottles the milk pays a 10c per CWT premium for all milk cooled by mechanical refrigeration. During June 14,313 lbs. of milk was produced and the 10c extra the Pinyerds got—and their neighbors without milk coolers didn't get—amounted to a neat $14.31. In passing we might add that their neighbor just down the road now has a milk cooler on order.

Mr. Pinyerd, better known as Carl, says: "But don't get the idea that this dairy equipment uses all that 635 kilowatt-hours. We've got some equipment around the house, too."

Some equipment is right! On the back porch is a 22 cubic foot cold storage and sharp freezer locker well filled with frozen berries, vegetables, and meats. Up until last spring, the Pinyerds rented a locker in Mt. Gilead, 13 miles away, but as Mrs. Pinyerd says, in order to get much good out of it you had to make at least one trip a week either to put things in or bring food home for use. This was not only tiresome but tire-wearing as well, so a home locker was installed. Now the cost of four 26 mile round-trips to Mt. Gilead (104 miles at 4c per mile—$4.15) is a credit toward the $15.00 monthly bill. In fact, the savings on the milk cooler and freezing locker alone are greater than the entire monthly bill, which includes the use of an electric range, household refrigerator, as well as the usual run of small appliances and motors.

The Pinyerds are proving once again that electrifying the farm pays dividends and in more ways than one, for Carl's parting remarks were something like this:

"Got our saving all figured out?"

We said we had all the figures on paper and he says, "Don't forget that our milking machine saves us the cost of a hired hand. We just couldn't milk all our cows by hand and still get our other work done, too."

So there you are, folks—electricity, the labor-saver; electricity, the money-maker; electricity, the farmer's best "wired" hand in the 24 hour a day job of producing "Victory Vittles."

A Word for Our Hospitals

A few weeks ago I had to have a serious operation. While at our Town Memorial Hospital, I had the time of my life. Electric bell to ring for my nurse, electric pads, radio, etc. I told the head nurse I was on my vacation and was enjoying it.

This is a great farming country. While we do not have all the electrical conveniences we desire on our farm, we are gradually climbing to our electric goal. I will remember, too, our fine electrified hospitals.

MRS. ORGAN W. RUNYAN
RFD 2, Fremont, Ohio

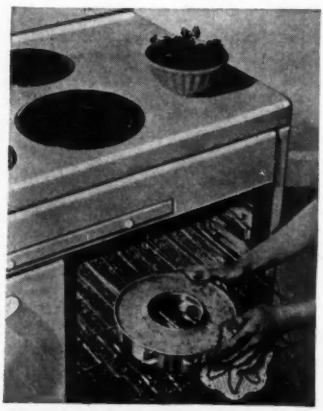
Electrical Housekeeping

Edited by **GAIL MEREDITH**

Leftovers—Good As First Servings

Some Ways of Making the Bottom Half of the Can as Good as the Top; Saving Vitamins; Preventing Waste. "Squaw Corn."

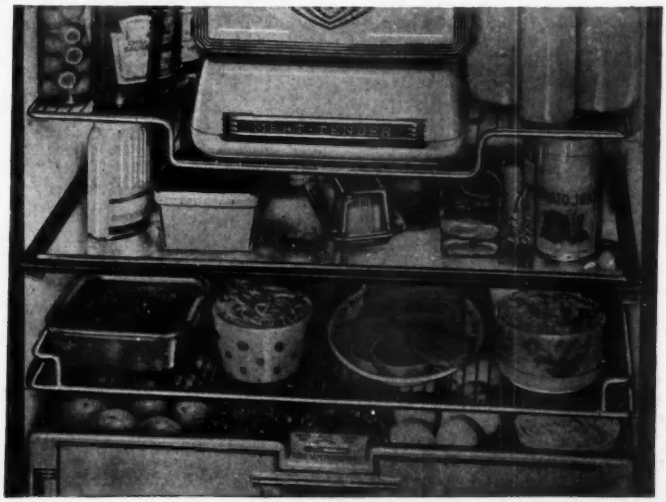
WE'RE a small family and I used to think that I never would find the lower half of a can of vegetables as appetizing as the top half. In fact, like a lot of other women I know, I used to dump out some vegetables, serve them piping hot with a fine dab of butter and generous seasoning of salt and pepper, then put the rest of the can away in the refrigerator. Way back out of sight, where I'd be quite apt to forget it for days, perhaps so long that I had to throw it away, finally, with much clucking of the tongue and shaking of the head.



But not any more. Not since food has become one of the weapons of this all out war, a weapon, moreover, whose handling is still pretty largely in our own hands. Instead, I've been making it my business to find out all I can about making canned vegetables just the next best thing to fresh in our daily meals.

The very first thing I encountered in all discussions of using canned vegetables, prepared at home or bought from the grocer's shelves—any vegetable except tomatoes, that is—was a definite warning to boil the contents of the can five minutes before serving. Don't boil them too hard, food experts say, and don't stir them unless there is danger of their sticking.

Left: Bake squaw corn in a moderate oven, 350 degrees. **Below:** Way back out of sight—but not any more.



The next thing was a plea to every cook to drain off any liquid that is not absorbed in the reheating. Some of the minerals and some of the vitamins have slipped out of the vegetables in the cooking and are trapped in that liquid. It is a good base for a chilled vegetable cocktail. It is a nutritious addition to a pot of soup, or gravy, or a cream sauce. It adds to the food value of a gelatin salad when it takes the place of other liquid. You can think of other uses, no doubt. Old or new, the main point is to use that liquid for something, and pending the time you can, to be sure and hustle it into the refrigerator to stay cold.

Leftovers Help Round Out Meals

You might think there isn't anything very new you can do with the last two cups of a can of tomatoes. I'm not sure these are new to you, but each old recipe has something just a little different that may jog your imagination into seeing each dish on your own supper table, steaming and fragrant, to round out winter meals. It is worth remembering that tomatoes do manage to keep quite a good deal of the Vitamin C they originally possessed.

I suppose the most popular method of downing a canned tomato is still by way of a bowl of soup. You can take two cups of the tomatoes and simmer them, not boil, just simmer them on the smallest burner of your electric range turned on low, with a slice

of onion, a single bay leaf, a splash of celery salt, and one scant teaspoon of sugar, for five minutes. Then rub that mixture through a strainer. Before you ever put the tomatoes on the stove, you should be making a thin white sauce with a couple of cups of milk, a couple of tablespoons of butter, two of flour, and enough salt and pepper to give it character. Try to get this thoroughly cooked, and the tomatoes hot just before you call the folks to dinner so you can combine the two and turn the soup into bowls while the folks are on their way to the table.

Soda Destroys Vitamin Content

I know there is no soda in that recipe, and I recognize that there is always the threat of curdling when you put tomato and milk together. Soda used to turn that trick, but while it gave you a smooth creamy soup, it was treacherously destroying a good part of the food value of that bowl of soup. Once you stirred in the soda, the vitamins vanished.

There is a new recipe for scalloped tomatoes that rings in half a cup of thinly sliced onions to give it a definitely different taste. If you would like to try it, put a layer of canned tomatoes in a casserole, season with salt and pepper and cover with a layer of onion, then with a layer of bread cubes. Keep on, one layer on top of the other till you've used two cups of the tomatoes, two of the bread cubes, and half a cup of the onion. The top layer should be bread. Pour a quarter of a cup of melted butter over the whole and bake in a 375 degree oven for at least thirty minutes, or until the onions are tender.

A supper dish combination of tomatoes and shirred eggs is simple and nutritious. Just grease a casserole and fill it half full with well seasoned tomatoes. Break in four to six eggs and slip the casserole into an oven you're using for some other baking. It should be a moderate oven, say 350 degrees, and twelve minutes is all it will take to set the eggs.

Canned corn can be scalloped, too, or fried in fritters, or made into chowder. It can be combined with other vegetables in casserole dishes or custards. But one of the best ways to perk up the second appearance of a can of corn is to fry it with bacon or bake it with green pepper and onion.

Squaw Corn

Cut:	¼ lb. of bacon into small pieces
Fry:	brown in skillet
Add:	1 medium onion chopped ¼ green pepper
Mix:	together 2 cups of corn 1 egg ½ cup milk
Add:	to bacon mixture. Pour into greased baking dish. Sprinkle 1 cup of cracker crumbs over top. Bake 40 minutes in a moderate oven, 350 degrees.

We always called it squaw corn when we made it in camp, as we have these dozens of times in the days when we enjoyed sleeping on the ground and cooking over an open fire in the woods. We used to cut up the bacon and fry it crisp, then turn in the corn and toss it about in the bacon grease till it was hot and brown. If it was a little greasier than we'd normally like, our ravenous appetites found that no drawback to enjoyment. But squaw corn in the kitchen is a somewhat different dish, and taking it by and large, if you can't eat it flavored with wood smoke, under the stars, and with the wind slipping through the trees overhead—probably better for a regular diet.

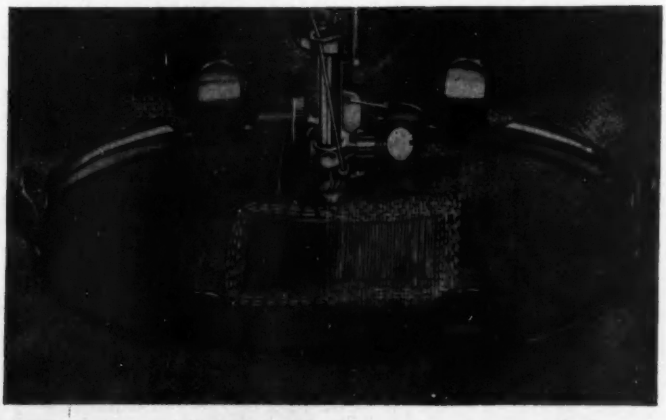
If you had an asparagus bed, you won't have any trouble finding a variety of ways to use each stalk of asparagus. One of the nicest is to serve it fried with a crunchy brown crust. Heat a little fat carefully. Drain the asparagus and roll it in seasoned flour. Be sure that it is as dry as you can get it to prevent spattering and to prevent cooling the fat. Brown first one side then the other, being careful not to break the stalk in turning it or lifting it out.

Once you set your mind to it, you'll find that there are countless ways of making the last half of the can as good as the first.

Darning With the Sewing Machine

If you have one of the modern flat darner attachments for your sewing machine, you can mend table linen and towels, sheets and pillow cases right on your sewing machine. The finished job is neater than even expert darning done by hand, and stronger than most.

The flat darner looks very much like an embroidery hoop and holds the fabric in place. To use it, you



Here's the first row of horizontal stitching that is made to cover the worn out spot. When this is completed the hoop is turned around and the stitching forms a basket weave as the lines cross the horizontal lines. This stitch can be adjusted in length to make the darn coarse or fine.

cut away the frayed material around the edges of the spot to be darned, then place the material in the darner frame, holding it in an upright position back of the sewing machine arm, and bringing it down under the needle and lower the presser bar, only after you have removed the presser foot from the machine. Outline the edge to be darned with three rows of stitching about ⅛ inch from the edge. This will give you a line to follow when darning and will make the mended area stronger. After the torn spot has been outlined, start at one end and sew back and forth, keeping the lines of stitching an even distance apart and carrying them up to the outline stitches around the edge. After the stitching has been completed in one direction turn the hoop around and sew crosswise. You'll find that this mending job will match the texture of the material very closely. If the material is sheer, weave a loose darn by moving the hoop far enough to make a long stitch. If you want a firm darned finish, keep the stitch short.

If you have some special darning problem you may be able to get help with it from a sewing center maintained by one of the machine manufacturers in many localities or from the clothing expert from the extension division of your state college.

"My Kingdom for a Cool, Quick Stove"

By **DOROTHY P. HOWLAND,**
Southampton, Mass.

An electric stove is an Aladdin's lamp to the busy farm wife who has to do quantity baking twice a week and cook 21 meals in seven days!

Every time I collect paper, kindling and stove wood for my wood burning range I murmur wishfully "to think I could just turn a button on and get instant steady heat."

When felling the trees, sawing the big limbs into stove length, chopping the fat sticks into thin sticks involves so much labor for the men folk, when persuading the boys to fill the woodbox every day and empty the ashes often takes so much time, I think wistfully of a fuel called electricity.

On some days when the dry wood is all gone, and I have to burn hissing poplar that really should be baked in the oven before it is boiled in the firebox, and my baking potatoes are still hard at 11:55, I mumble crossly to myself "a woodlot for an electric stove."

Every time I brush off the extensive surfaces of my stove, sweep the dust and ashes from under its legs and spend hot minutes blacking the body of the monster, I remember "you could just turn the button off and wipe a shining face clean."

On hot summer days when canning and meal getting have to proceed simultaneously the kitchen is so hot and the work takes such a long time that as I wipe the perspiration from my flushed face I sigh hopelessly "my kingdom for a cool, quick stove."

When my cake piles up on one side of the pan and browns unevenly because the oven is hotter on one side than on the other, I think disconsolately of the lovely even, brown cakes which an electric stove would produce.

I'm "rubbing the lamp" come the end of the war!

Care Will Lengthen Life of Shoes

We can make the shoes in our closets last longer and look better with just a little extra care. One of the very first things to do is to drag out that old adage about a stitch in time. Make repairs just as soon as a shoe shows wear. Have rips sewed up, holes patched, and heels straightened or replaced as soon as they're worn or crooked.

Shoe Leather Enemies

The chief enemies of shoe leather are mud, water, perspiration, and too much dryness.

Since perspiration is hard on leather, it is real economy to have two pairs of shoes and wear them alternately so each pair has a chance to air and dry between wearings.

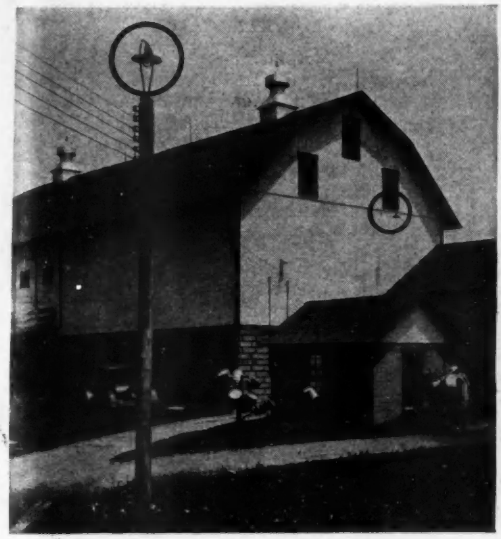
Clean or wash mud off your shoes before it dries on. This will keep the mud from staining the leather. Milk spilled on your shoes should be wiped off at once so it will not leave a stain.

Don't try to get along without rubbers or galoshes to protect your shoes on snowy wet days. But if worst comes to worst and your shoes do get wet, stuff the shoes with paper, and dry them slowly, for 12 to 24 hours, never close to the fire or in the hot sunshine. Water stiffens leather by taking out the oil, so while the leather is still damp, rub the soles and uppers with castor oil if the shoes are to be polished later, and when they are thoroughly dry, do the polishing.

Work shoes need plenty of oiling or greasing to protect them. Neat's foot oil, castor oil, cod oil, tallow, wool grease, or a mixture of any of these improve such shoes. Apply it freely and rub it in with the palm of your hand. If the shoes have rubber heels, be careful not to grease them, too. Grease or oil softens rubber.

Polishing shoes is not wholly a matter of looks. Leather men say that polish resists water, and constant polishing makes shoes more flexible, adding to their useful life.

The measure of a man is the size of the thing it takes to get his goat.—Clarence Darrow.



Save Waste with Yard Lights

Burned buildings from tipping over lanterns, injured bodies from falling in the dark, and lost time from being unable to see to work, are all waste. If you have never used a yard light when doing chores on dark nights, or for routing prowlers or in caring for livestock at night, you do not know what a great convenience and helper a light can be.

Placement of Yard Lights Determines Serviceability

The illustrations show several methods of mounting outside lights. Placing the light at the corner of a building will light two sides of the building and the surrounding yard. Put the lamps where they will light the paths you travel at night and the areas where you work. Remember that light does not bend around a corner. Look over the yard to be sure that a tree or pole will not cast a shadow where you walk. If a lamp is placed directly above the top of a pole as shown in one of the pictures, it will not cast a shadow of the pole.

In order not to have light being wasted up into the sky and to protect the lamp from rain damage, one should always use a reflector over it. An RLM dome reflector gives good distribution of the light over a wide area. Shallow bowl shaped reflectors shaped like an inverted wash basin are also good.

It is most convenient to have the lights controlled by a switch in the kitchen, the barn or garage, or better still by having three- and four-way switches in kitchen, barn and garage and possibly in the bedroom. Methods of connecting these switches are illustrated in the August issue of ELECTRICITY ON THE FARM.

Tadpoles fail to transform into frogs if kept in water with no trace of iodine, and fed upon a diet free from iodine compounds.

When electricity came to the neighborhood where the owner of the above barn lived, he had his house wired, but could not see the necessity of spending about $15.00 for a bare necessity job of barn wiring. He had a perfectly good lantern.

Nobody knows whether old Molly resented this decision or not, but she did kick over the lantern within a few days after service was connected at the house, and the picture tells the rest.

Maybe it was a good thing in the long run, because now there is a much better barn on the farm,—and there is electricity in it.

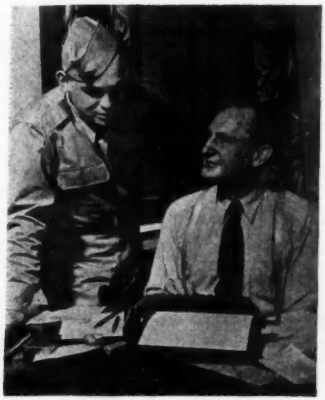
By JEROME J. HENRY

About People

When Dinah Shore finished a guest appearance at the Las Vegas Army Air Gunnery School, she was stopped at the gates by four sentries, who complained that because they were on duty, they'd missed her songs. Dinah got out of the car and put on a 15-minute concert in the roadway, while the four soldiers listened. . . .

A production-director for one of the big shows is always on the lookout for new talent. But recently he thought he had been asked to bear too much. He listened to a woman who had to be told what the mike was! . . .

Mary Patton of the "Road to Life" cast was not always a radio actress. Once she was a saleswoman in a Boston shop, where she sold 10 identical pink organdy dresses to 10 girls who were going to the same college prom. After the girls met at the dance, Mary was unemployed. . . .



Upton Close, Far East expert and Commentator for the NBC "World News Parade," talks over a broadcast with his son Lewis, member of the Army Medical Corps, when they met by accident in Chicago.

Anne Seymour ("The story of Mary Marlin") has a pet story on the effect of gas rations. She recently was on a Greenwich bus, bound for New York, when the bus was signaled to a stop by a smartly uniformed chauffeur, waiting in front of a large Connecticut estate. When the doors opened, the chauffeur escorted a lady to her seat, saluted smartly, and stepped back on the side-walk. He stood at attention until the bus was out of sight. . . .

Don Ameche thinks his training in law (as a student at the University of Wisconsin) gives him at least one defensive weapon against the prattle of Charlie McCarthy since he has returned to the show which started the talkative little dummy.

No Rags, No Bones, No Bottles

Lucille Manners is greeting all of her friends and neighbors these days with the standard salutation, "Any old radios today?"

The singing star of "Cities Service Concerts" is devoting her spare time to the current drive for radio sets for the boys in the U. S. Army camps here and overseas.

Before going to camps—from Greenland to Africa—the sets are reconditioned in NYA work centers by young men enlisted in the U. S. Signal Corps Reserve.

Recently named "Chief Pretty Officer" by sailors at the United States Naval Training Station, Great Lakes, Illinois, is Rita Ascot (Fay Perkins of the Ma Perkins cast). And for giving material aid to the production of radio shows for the Navy, Rita has been awarded a U.S.N. Certificate of Gratitude, one of the few times that such recognition has been accorded to a woman.

University Has Hemispheric Campus

A campus that covers a hemisphere is used by the NBC Inter-American University of the Air—in the USA, in Canada, and in Latin American nations.

"Lands of the Free" is the second term of the University, now under way. It is a series of programs designed (1) to give a chronological study of the vital elements in Western Hemisphere history; (2) and to offer analysis of the various social, economic, and political problems of the Americas.

"Music of the New World" is another course in the University, and in this second term is designed to trace development of music in the Americas from the Pre-Columbian era to the present. The NBC symphony orchestra, under the direction of Dr. Frank Black, provides the orchestral framework.

The "students" in this university are Mr. and Mrs. Average Listener. Printed aids, which summarize and supplement the programs, are available.

"Lands of the Free" can be heard on Mondays, 10:30 to 11:00 p. m., EWT; and "Music of the New World" on Thursdays, 11:30 to 12:00 midnight, EWT.

How to Save Baling Wire

Here is a good suggestion from a farmer on what to do with baling wire. He says: "Since baling wire began to get scarce I take the wires off the bale carefully, straighten them out and slide them into a ten-foot length of pipe four inches in diameter. When the pipe is full I pull the bundle of wire out a little way at a time and wrap or tie the wires securely. Then I store the bundle of wires away in a dry place and save them until we need them next year."

From E. C. Schuh, Puget Sound Power & Light Co., Seattle

Flowing Water Necessary to Keep Pipe from Freezing

▶**Question:** *Would you kindly advise the very minimum rate of flow (gallons per minute) necessary to keep 40° water passing through 450 feet of 1¼ inch exposed pipe from freezing at zero temperature? Am attempting to install water in our dairy barn from a spring which is over 500 feet from the barn and 60 feet lower than the barn. 450 feet of this distance will be over rock where it would not be practical to sink the pipe below freezing. For this reason I thought of using a pressure tank at the spring and have the water flow continually during freezing weather. This spring can only furnish up to one gallon per minute. If a flow of slightly less than one gallon per minute at zero temperature isn't sufficient to protect this pipe against freezing there are three other alternatives, first, a large tank at the spring, and one at the barn, which could be filled in mild weather —second, a three or four inch layer of dirt or gravel over the pipe would afford some protection—third, would be to raise the water temperature 10 to 20 degrees by means of a tank heater in zero weather. Could you help work out a plan by which the flowing water would keep the pipe from freezing for this winter, even if the water would have to be heated before entering the pump?*

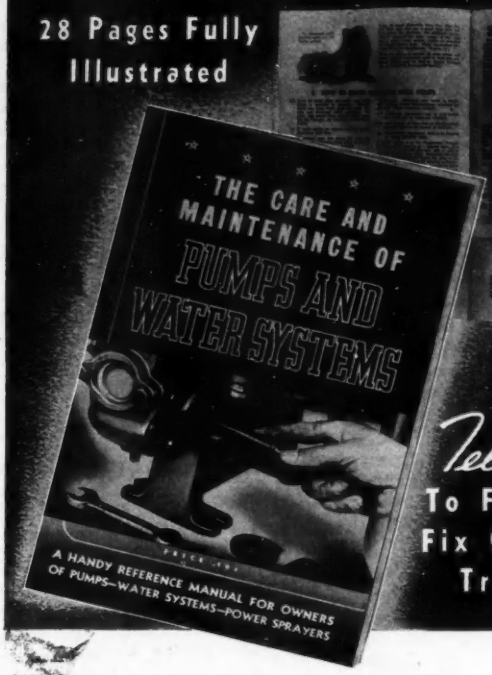
G. H. B., Ky.

▶**Answer:** It will take a flow of approximately 5 gallons per minute to keep your 450 feet of 1¼" exposed pipe from freezing. The pipe would freeze up with a flow of only 1 gallon per minute. If your pump at the spring has a capacity of 300 gallons per hour or more, tanks at the spring and barn which would hold a one or two days' supply should take care of the situation for you. After pumping, the pipe line would have to be drained. Covering the pipe with three or four inches of dirt would help but I am not sure it would get you through a protracted cold spell. If you were to use the tank heater, it would be necessary for you to raise the temperature of the water 30° to keep it from freezing in the pipe when flowing at 1 gallon per minute.

Twenty-four million pounds of copper have been saved in the last few months by substituting silver for copper in electrical conductors. The silver is loaned by the Government and is to be returned after the war.

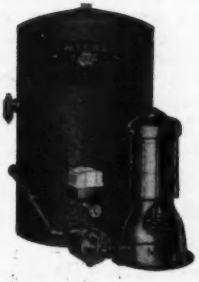
New FREE BOOK!

28 Pages Fully Illustrated


THE CARE AND MAINTENANCE OF
PUMPS AND WATER SYSTEMS
A HANDY REFERENCE MANUAL FOR OWNERS OF PUMPS—WATER SYSTEMS—POWER SPRAYERS

Tells How To Find and Fix Ordinary Troubles

No matter what make of pumping equipment you own, you need this authoritative manual on care and repair. Tells how to make minor adjustments and be your own service man on simple repair jobs. Points out preventive measures to avoid break-downs and costly replacements. Full of illustrations. Gives useful information on all types of pumps, spray pumps and water systems.



Remember, most dealers are now shorthanded because of the war. By helping avoid needless service calls, you help save time, tires and needed manpower, and your dealer will appreciate it. *But*—when a service call *is* necessary, get the capable service of an experienced pump man. You can depend on your Myers dealer for repair parts as well as expert servicing on any make of pumping equipment. Mail coupon for free book and name of nearest Myers dealer.

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Send your free Care and Maintenance manual and name of your nearest dealer.

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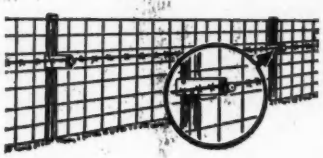
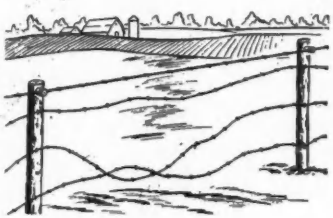
Fences Can Be Maintained Electrically

The 1943 allotment of steel for wire fencing of all kinds is going to reduce the supply to about 21 per cent of normal. That means the old fences are going to have to do and possibly they will have to



supply the wire to be taken down for use elsewhere if additional fences are needed. Complicated further by shortages of labor, any method of prolonging the usefulness of fences or of making them give service with a minimum of labor, should be welcome. It looks as if here is where the electric fence can do some real war service.

For any farm that has an electric fence controller or can get



one, the problem of maintaining an effective fence should be considerably simplified. Since fewer wires are needed to form the livestock barrier, some of the old barbed wire fences may contribute a wire to be used elsewhere to supplement a failing woven wire fence or to enclose new pasture areas for more efficient grazing.

When a woven wire fence is no longer serviceable, a strand of electrically charged barbed wire run along the inside of that fence will often prevent further damage and restore it to service. The charged wire should be supported on porcelain insulators attached to arms made of 1 x 4's 10″ or 12″ long and nailed 36″ to 40″ from the ground on every second or third post. Insulators are still available.

Decrepit barbed wire fences can be rejuvenated by restringing one strand of wire on insulators as shown.

Even posts that are about to rot off at the ground may have their usefulness extended by a charged fence wire. They will repel livestock by a stinging shock instead of resistance to force.

Use your fence controller; but do not risk the hazard of rigging up an electric fence of your own or your neighbor's concoction. They can be dangerous; and life is still more precious than steel.

Shoe Polish for White Lining of Lamp Shades

Much has been said about using white lined lamp shades to get the most usable illumination from a lamp. Here is a "hot" idea on how to put a white lining in your old shade. The idea comes from Mrs. Lucille Holleman, Home Economist of the Georgia Power Company at Statesboro, Georgia.

It's done with white shoe polish!

Mrs. Holleman says the heavy milky shoe polish that does not separate is the right sort to use. Two coats should be applied. The first may be smeared on, but the second should be daubed on, which gives a uniform finish. It is a good way to use up left-over Summer shoe polish; or if there is no left-over, a bottle from the dime store will fix up several shades.

Skimp on Feed and Hens Skimp Eggs

Proper feeding of farm poultry flocks is of importance in obtaining the eggs required to achieve the national production goal, says Dr. W. C. Thompson, professor of poultry husbandry at Rutgers University.

An average of nearly 1½ ounces of feed and 1 1/3 ounces of water are required for the production of an egg. This is in addition to the feed requirements necessary for the growth and maintenance of pullets and hens. Tests show that even a small reduction in feed means sharp curtailment in egg production. It has been shown at the U. S. Department of Agriculture's Southwest Poultry Experiment Station, at Glendale, Ariz., that reducing the feed intake of one group of birds 12½ per cent caused production of eggs to be reduced 30 per cent, while a group that received 25 per cent less feed produced 50 per cent fewer eggs. Production of both groups was compared with a group on full feed.

Poultry scientists have developed a number of feed mixtures which have proved their worth for use during various seasons. These have been worked out from the standpoint of utilizing the feeds available in various states and localities and are obtainable through county agricultural agents.

A milch cow requires as much care in a year as an acre of apple orchard.

Pumps should be oiled regularly. Examine the crank case oil to be sure leaking water has not filled the bottom of the case. Remember that the oil will float on top of the water.

If pressure switches get out of order it is best to send them to the pump company for exchange.

"It's from Pa. He says the milking machine that replaced me is much easier to wake up."

Questions and Answers

Ultra-Violet Lamps for the Home

▶ **Question:** *I would like information on Ultra-violet sun lamps. Would like to know how to determine the amount of violet ray each type of lamp supplies, which is more beneficial, etc? In fact, anything that I should know, so that I may be able to buy a home use Ultra-violet sun lamp with some degree of intelligence regarding these lamps.*
H. W. P., Maine

▶ **Answer:** Carbon arc lamps and mercury arc lamps of various types produce healthful Ultra-violet radiations. The carbon arcs are usually a little cheaper but are more dangerous to use both from the standpoint of open electric circuits and harmful Ultra-violet rays and are more troublesome because carbons have to be replaced and kept adjusted. The S-1 and S-4 mercury arc lamps are very satisfactory sources of Ultra-violet for the home. These lamps are made by a number of manufacturers and must be used in fixtures containing special transformers. The S-4 lamp uses about 125 watts and is a more efficient producer of Ultra-violet than the S-1 lamp which uses 400 watts.

It is difficult to test these lamps without special equipment. A rough way of checking would be to expose a small square of skin on your arm through a hole in a piece of cardboard to each of the lamps at a distance of exactly 2 ft. from the light source for a period of say 5 min. After a few hours the skin will turn red as from sunburn. The reddest spot indicates the more potent Ultra-violet radiation.

Determining Voltage Drop

▶**Question:** *What is the method of determining voltage drop in transmission lines.* F. W. E., Wis.

▶**Answer:** The method of determining voltage drop in transmission lines is to use a volt meter with suitable instrument transformers, at each end of the section in which you wish to know the drop. The difference in voltage at the same moment at the two points gives the drop.

If you wish to *calculate* the voltage drop in a 60-cycle alternating current circuit the following formula applies

$$V = E' - E = \frac{I \times Z \times 2L}{1{,}000}$$

in which V is the voltage drop, E' the line voltage at the starting end and E, the voltage at the load end. I is the current flowing, Z is the 60 cycle impedance of the line in ohms per 1,000 feet of conductor and L is the length of line in feet. You would have to look up the impedance in a wire table.

The formula applies to single phase two-wire circuits, and the two hot wires of a 3 wire balanced load circuit. The 2L becomes $\sqrt{3}L$ between lines in a three phase balanced load circuit.

Water Trough Heater

▶**Question:** *Where can I purchase an immersed water heater for a 20 gallon trough, 11½ in. wide and 68 in. long, same to be arranged so stock cannot get to element. I want just enough heat to keep water from freezing. Tank will be inside barn. Any information will be appreciated.*
H. F., Ind.

▶**Answer:** The Lyon Rural Electric Company, San Diego, California, makes several types of immersion heaters which would keep your water trough from freezing. My suggestions would be to use a 400-watt heating element if you use it in combination with a thermostat. If you keep it on continually without a thermostat, I would suggest trying a 200-watt element. It would not be necessary to have the heating element run the full length of the tank.

Another method of heating the tank would be to use soil heating cable with a soil heating thermostat. Lead covered cable in lengths of 60 ft. has a rating of 400 watts. Small diameter rubber covered heating cable in lengths of 60 ft. has a rating of 200 watts. These cables may be laid directly on the bottom of the wood trough and covered with asphalt or not, as you prefer. Thermostats would have to be protected from the stock.

It is just possible that a 155-watt Trumbull poultry water warmer which has a built-in thermostat might answer your purpose if the building is reasonably warm. It is a self contained unit and only need be dropped into the trough. Trumbull makes a 300-watt heater similar to the poultry water warmer on special order. It should do a good job.

Book on Motor Repairs

▶**Question:** *Can you please advise me where I can obtain a book on operation and repair of electric motors. I run a farm and often our motors are in need of minor repairs which I could make myself with a few hints.* L. S., New Jersey

▶**Answer:** I regret to advise you that I cannot give you the name of any simple instruction book on the operation and repairing of electric motors. The McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York, has a 431 page book on "Fractional Horsepower Electric Motors" at $3.50 which is quite complete on the design, construction and winding of different types of small motors. They also have a 281 page book at $3.00 on "Winding Alternating Current Motor Coils." It is entirely on the subject of motor coils.

Iowa State College, Ames, Iowa, has a Bulletin #P-13 New Series on Electric Motors for the Farm in which some pointers are given on the operation and care of motors and on motor troubles.

The Department of Agricultural

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Engineering, Cornell University, is preparing a small bulletin on the care and repair of motors on the farm.

We are arranging to run a series of articles on the oiling and simple repairs of motors used on farms, but this series will extend over several months' time.

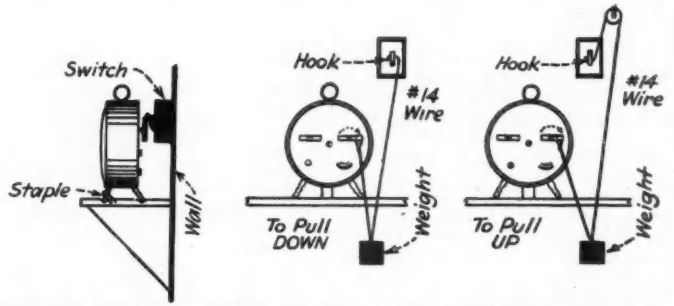
Alarm Clock to Snap Switch

▶**Question:** *Have you ever had any articles in your magazine on using alarm clocks to turn poultry lights on in the mornings? Would appreciate any suggestion you may offer on this subject..* M. H., Ohio

▶**Answer:** In years past we have had several articles on how to use alarm clocks for operating light switches.

If you use a toggle or snap switch, one of the easiest methods is to build a shelf under this switch so a Big Ben clock can be placed on the shelf with the alarm winding key against the switch lever after it has been pulled down. When the alarm goes off the unwinding key will snap the switch. It is necessary to place the alarm clock accurately in position by trial and to make small depressions in the shelf to fit the legs of the clock so that it can always be placed in the same position. One leg of the clock will have a tendency to lift when the alarm goes off. Just drive a small staple over it and slip the leg of the clock under the staple when placing it.

Another method is to use a small weight to operate the switch, fastening the weight to a string which has a loop in the end and can be slipped over the winding key and will slide off when the key unwinds. This will drop the weight and trip the switch. By using a pulley the switch can be tripped either up or down.



Left: Big Ben clock with solid winding key trips toggle switch when alarm goes off and key unwinds. Center and Right: Here the key is used to support a weight on a string. When the key turns, the weight drops and snaps the switch. You may need to drill a hole in the switch handle and hook a string or wire through it. In center sketch switch is pulled down; in right hand sketch it is pulled up.

Large Stock Tank Heater

▶**Question:** *Do you know anything about electric water heaters for a large tank like I have for our stock to drink out of? Tank is 10 ft. in diameter and about 30 inches deep. What I would like is a unit to put in the water and leave there all the time in the winter so it would keep the water about 50 to 60 degrees or perhaps lower.*

J. S. M., New York.

▶**Answer:** I would not recommend the use of an electric heater in a tank 10 ft. in diameter and 30 ft. deep, in the climate of Central or Northern New York. That is just too much water to keep warm economically with electric current. You can get satisfactory results from electric heaters, however, by placing them in confined sections within your large tank. If you will knock the heads out of a barrel and cut it down to about the depth of water in your tank and place this barrel around your electric water heater of, say, 1,000 watts capacity, you can keep the water in the barrel at a good drinking temperature. The barrel should be raised from the bottom of the tank so the water can flow in at the bottom. It should extend above the water surface.

Heaters suitable for use in a barrel or box of this type are available from the Lyon Electric Company, San Diego, Calif., and the National Ideal Company, Toledo, Ohio.

If you want a large wattage heater for your large tank, they were made several years ago by the Hovey-Hayes Company, Kansas City, Mo.

Farm Search Light

▶**Question:** *It seems to me, that a light located on the barn or other convenient place which could shine out over the pasture a half mile or more after dark to locate cows, horses and other livestock, would be very handy. Would such a light be practical? If so, how could I make one or where could I purchase one?*

H. P., Mo.

▶**Answer:** To do that job would require a searchlight similar to those employed on large motor boats. To project the beam from one-half to one mile would probably require parabolic reflectors 10 to 12 inches in diameter and special concentrated filament searchlight bulb. The one mile ray searchlight manufactured by the Portable Light Co., Inc., 23 Warren St., New York City, would seem to fill the bill. You would need an AA-4 priority or better, and 8 to 10 weeks time.

For ranges or one-quarter to one-half a mile, good automobile spot lights might be used satisfactorily. It would, of course, be necessary to operate these at about 6½ volts, reducing the voltage with a transformer of about 50-watt capacity.

Snapped Corn Sheller

▶**Question:** *Is there a sheller on the market that can be operated with a 1 to 5 hp single phase motor? This, of course, means one that will shell corn with the shuck on the ear.*

J. W. H., Tenn.

▶**Answer:** The C. S. Bell Company, Hillsboro, Ohio, manufacture a small cylinder type ball bearing corn sheller which may answer your requirements. It may be operated at from 583 r.p.m. to 875 r.p.m. with a 1½ to 3 hp electric motor. I am not just sure how effectively these shellers will work on snapped corn. I believe some work was done in the Agricultural Engineering Department at the University of Tennessee with one of these shellers several years ago and they can probably give you first-hand information.

—I'm proud I am a farmer!—

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WAR PRODUCTION CONTEST

SUBJECT: *Our Electric Brooder Helps In War Production*

★ RULES OF THE CONTEST ★

Explanation of the Subject: The demand for poultry and eggs for use at home and for shipment to our soldiers and allies puts a real job on the poultrymen of this country. Brooding chicks is only one of many steps in the production of poultry, but it is an important one, and one with which electricity helps. In your contest letters this month, we want your *experiences* with electric brooders. Figures on time saved, chicks saved, increased number of chicks raised, quality, etc., will be helpful. Remember, we want to use your letter to help some other producer.

First Prize: A $25 War Bond.

Second Prize: $5 in War Stamps.

Five Prizes: Each $3 in War Stamps.

We will also pay $1 each in war stamps for any other entry published.

In addition $1 to $3 in war stamps will be paid for each photograph or sketch illustrating your statement and which we can use.

Winners will be announced in the March issue. In case of a tie each winning contestant will receive the full prize to which he is entitled.

All members of the family may enter the contest, but each may submit only one statement.

The decision of the judges is final, and all entries become the property of this magazine.

Send your letter on a plain piece of paper, letterhead or postal card.

Mail entries to Wartime Contest Editor, ELECTRICITY ON THE FARM, 24 W. 40th St., New York City. They must be postmarked **before** February 1.

NOVEMBER CONTEST WINNERS

The November contest was on the subject, "How We Saved Service." The winning letters will be published in a later issue of the magazine. The winners were:

FIRST PRIZE — $25 WAR BOND
MRS. O. BERG,
Route No. 1 — Malta, Ill.

SECOND PRIZE — $5 IN WAR STAMPS
MISS L. M. PHANEUF,
12 Court Street — Concord, N. H.

FIVE — $3 PRIZES
ELLA E. APPELBERG,
Route No. 1 — St. Anne, Ill.
ALICE S. DAWSON,
R. R. 3, Box 203 — Plymouth, Ind.
MR. BEN KOMNICK — Chatham, Ill.
MR. C. L. KUTIL — Antioch, Ill.
EDWARD M. VEST, R.R. No. 7, Decatur, Ill.

The following have also been purchased:

Mr. Paul J. Hook, Box 367, Hillsboro, N. H.
Muriel Berry, Litchfield, Maine
Mrs. R. Rosebrook, Wauseon, Ohio
Mrs. Goldie Brown, R.D. No. 6 Greenville, Pa.
Mr. John Likins, Argenta, Ill.
Mrs. H. R. Hill, Box 133-C, Richmond, Va.

INFORMATION
Service for the Reader

I wish to take this opportunity to thank you for your courteous assistance in helping me locate the address of the Speedway Mfg. Company.

You not only gave me this information but obtained for me the local agent of the firm to whom I sent my drill for servicing, and now I am happy to say I have it back in good running order.

By using the coupon in your valuable paper, I was thus given welcome aid in a time of need—and with a minimum amount of effort on my part. I very much appreciate your action.

Yours sincerely,

HERBERT LLOYD (Signed)

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